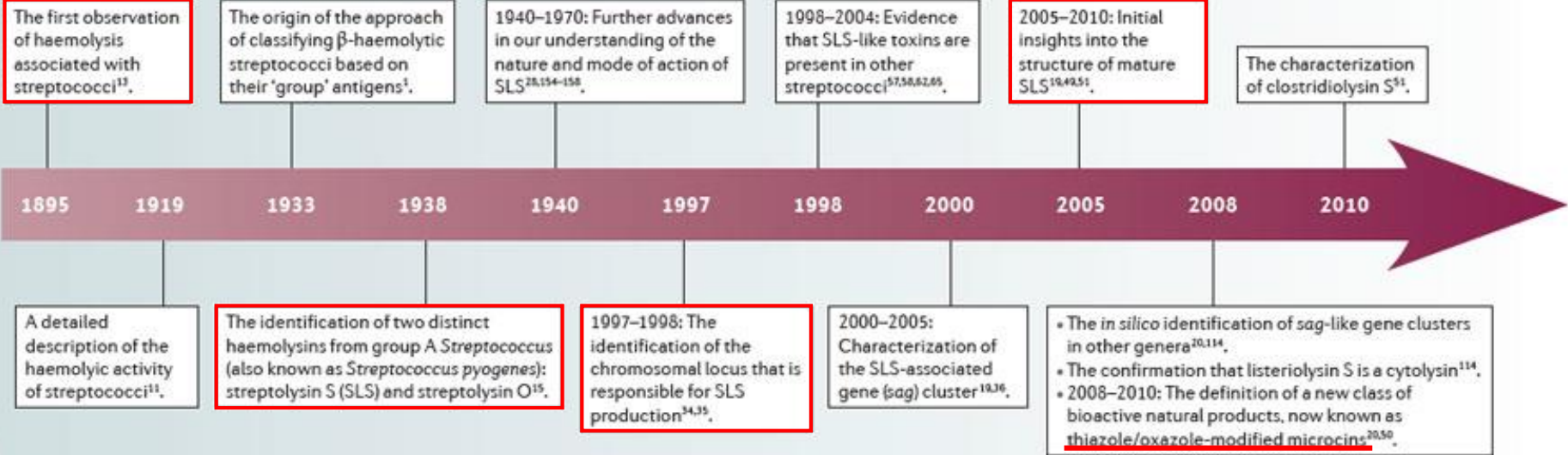


レンサ球菌が産生するペプチド毒素

**Streptolysin S**

# Streptolysin S (SLS)に関する歴史的背景

## Timeline | History of streptolysin S research



Molloy EM *et al.* (2011) *Nat Rev Microbiol.* **9**(9):670-681.

# TOMMs: Thiazole/Oxazole-Modified Microcins

Haft et al. *BMC Biology* 2010, **8**:70  
<http://www.biomedcentral.com/1741-7007/8/70>



## RESEARCH ARTICLE

## Open Access

# Expansion of ribosomally produced natural products: a nitrile hydratase- and Nif11-related precursor family

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### Abstract

**Background:** A new family of natural products has been described in which cysteine, serine and threonine from ribosomally-produced peptides are converted to thiazoles, oxazoles and methyloxazoles, respectively. These metabolites and their biosynthetic gene clusters are now referred to as thiazole/oxazole-modified microcins (TOMM). As exemplified by microcin B17 and streptolysin S, TOMM precursors contain an N-terminal leader sequence and C-terminal core peptide. The leader sequence contains binding sites for the posttranslational modifying enzymes which subsequently act upon the core peptide. TOMM peptides are small and highly variable, frequently missed by gene-finders and occasionally situated far from the thiazole/oxazole forming genes. Thus, locating a substrate for a particular TOMM pathway can be a challenging endeavor.

# SLSは化膿性レンサ球菌群の溶血因子である

Organism	Associated activity	TOMM	Genes	TOMM function	References
<i>Pathogenic bacterial species</i>					
<i>Streptococcus pyogenes</i>	Causes respiratory tract infections, skin diseases and invasive infections	Streptolysin S	<i>sag</i> ABCDEFGH	Haemolytic exotoxin	15,34,36
<i>Streptococcus dysgalactiae</i> subsp. <i>equisimilis</i>	Causes pharyngitis and invasive infections	Streptolysin S	<i>sag</i> ABCDEFGH	Haemolytic exotoxin	57
<i>Streptococcus iniae</i>	A fish pathogen and rare human pathogen that causes invasive infections	Streptolysin S	<i>sag</i> ABCDEFGH	Haemolytic exotoxin	62
<i>Streptococcus equi</i>	A horse pathogen	Streptolysin S	ND	Haemolytic exotoxin	65
<i>Listeria monocytogenes</i>	Causes gastroenteritis, septicaemia and meningitis	Listeriolysin S	<i>lfs</i> AGHXBYDP	Haemolytic exotoxin	20,114
<i>Clostridium botulinum</i> and <i>Clostridium sporogenes</i>	Causes botulism poisoning	Clostridiolysin S	<i>cls</i> ABCDEFGH	Haemolytic exotoxin	20,51,114
<i>Staphylococcus aureus</i> str. RF122	Causes bovine mastitis	Staphylysin S	<i>sts</i> AGHBB'CC'DP	Haemolytic exotoxin	20,49,114
<i>Non-pathogenic bacterial species</i>					
<i>Escherichia coli</i>	A gut commensal with pathogenic potential	Microcin B17	<i>mcb</i> ABCDEFG	Antibacterial (DNA gyrase inhibitor)	44,46,47
<i>Prochloron</i> sp.	A photosynthetic endosymbiont of the ascidian <i>Lissoclinum patella</i>	Patellamide D	ND	Reverses multidrug resistance in a human leukaemia cell line	148,149
<i>Streptomyces</i> sp. TP-A0584	A soil inhabitant	Goadsporin	<i>god</i> ABCDEFGHRI	Antibiotic, and promoter of secondary metabolism and morphogenesis	123,143,144
<i>Bacillus amyloliquefaciens</i> str. FZB42	A saprophyte that promotes plant growth	Plantazolicin	<i>pzn</i> FKGHIAJCDBEL	Narrow-spectrum antibacterial	20,151

*mcb*, microcin B17 gene; ND, not determined; *sag*, streptolysin S-associated gene; TOMM, thiazole/oxazole-modified microcin.